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THE NATO U.S.-GERMAN MULTINATIONAL CORPS:
COMMAND AND CONTROL RESOURCES FOR
EMPLOYMENT OF TACTICAL COMBAT FORCES

A Monograph
by
Major Barry A. Maxwell
Infantry

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School of Advanced Military Studies
United States Army Command and General Staff College
Fort Leavenworth, Kansas

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Major Barry A Maxwell

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Approved by:

James W. Townsend Monograph Director
COL James W. Townsend, MA

James R. McDonough Director, School of
COL James R. McDonough, MS Advanced Military
Studies

Philip J. Brookes Director, Graduate
Philip J. Brookes, Ph.D. Degree Program

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ABSTRACT

THE NATO U.S.-GERMAN MULTINATIONAL CORPS: COMMAND AND CONTROL RESOURCES FOR EMPLOYMENT OF TACTICAL COMBAT FORCES by Major Barry A Maxwell, USA, 45 pages.

The multinational corps concept is relevant to NATO as a way of dealing with the changes brought about by the unification of Germany, the impending withdrawal of the Soviet Union's military forces from Eastern Europe and budget constraints in NATO nations. These changes are bringing about reductions in forces, perceptions of a decreasing threat and a need to change the historic national corps positioning and employment concepts. A U.S.-German multinational corps is one structure being examined for use in this new situation, and command and control in such a corps will be complicated due to internal differences in language, doctrine and force structure.

This monograph answers the question: What command and control resources must be provided for in the tactical employment of combat forces in a future NATO U.S.-German multinational corps? The answer is sought by examining the conditions that make such a corps useful and by defining command and control in a multinational environment. Next, the study contrasts command and control in a pure U.S. corps with a U.S.-German multinational corps, by examining how the command and control functions of planning, directing, controlling and coordinating are affected by differences in the resources of communications systems, facilities, procedures and personnel. By analyzing these differences this study identifies implications for C² resources that must be provided for the multinational corps to operate effectively.

Despite years of cooperation and great effort toward standardization, many command and control differences exist between the two armies and significant resources will be needed to bridge those differences. Secure communications and transmission of data and graphics are a problem; command posts operate differently; there is considerable divergence in doctrine and procedure, and the German division G3 staff section is much smaller than that of a U.S. division. None of these diversities are insurmountable if the necessary time, effort and money are provided, especially for manning, training and equipping liaison elements. If such resources are not provided, the multinational corps will be left to operate at a much lower level of effectiveness than the purely national corps.

Table of Contents

	page
I. Introduction.....	1
Multinational Corps.....	1
Methodology.....	7
II. Comparison and Implications.....	8
Communications.....	8
Command and Control Facilities.....	16
Command and Control Procedures.....	20
Personnel.....	26
III. Conclusions and Recommendations.....	35
Endnotes.....	38
Bibliography.....	42

I. INTRODUCTION

This study answers the question: What command and control resources must be provided for in the tactical employment of combat forces in a future NATO U.S.-German multinational corps? The answer is sought by examining the conditions that make such a corps useful and by defining command and control in a multinational environment. Next, the study contrasts command and control in a pure U.S. corps with a U.S.-German multinational corps, and identifies resultant command and control resource implications.

This study highlights many command and control differences between the two armies and the significant resources needed to bridge those differences. None of these diversities are insurmountable if the necessary time, effort and money are provided. If they are not, the multinational corps will be left to operate at a much lower level of effectiveness than the purely national corps.

THE MULTINATIONAL CORPS

The multinational corps concept is relevant to NATO's future force planning as one means of dealing with the significant changes in the international situation in Europe and the Soviet Union. These changes, including changes in Germany's sense of national identity, have manifested in NATO nations a desire for force reductions and a need to change the historic national corps positioning and employment concepts.

Looking first at the desire among allied nations for force reductions, it appears to derive from a number of factors. First is the lessening of the Soviet military threat, as shown by the Soviet's participation in Conventional Armed Forces in Europe (CFE) reductions and their willingness to withdraw from Eastern Europe. The reduced Soviet threat has been further shown by the August 1991 coup attempt and fragmentation of the Soviet Union.

Second, allied nations have budgetary constraints to consider. Germany is finding the integration of the former German Democratic Republic to be very expensive. Germany is also spending large amounts of money to transport Soviet personnel, units and materiel out of the former German Democratic Republic.

Tight money and a reduced threat combine to produce public support for smaller militaries. This has brought a number of allied nations, especially Belgium and the Netherlands, to the point where they can no longer field an active duty, national, corps-size unit as part of their NATO force contribution. If these nations are to continue to participate with active forces, then they must do so at reduced scale within multinational corps.¹

NATO's geographic, political and military orientation has been affected by the unification of Germany, withdrawal of the Soviet military from Eastern Europe and dissolution of the Warsaw Pact. With no massive enemy deployed along the old "Inner-German Border," there must be changes to the historic positioning and "layered" General Defense Plan employment concept of the current national corps in the Northern Army Group (NORTHAG) and the

Central Army Group (CENTAG). During future employment, traditional national corps boundaries and fixed subordinate unit relations across them will be less feasible without a specific, directional threat. More flexibility in positioning and employment of units will be necessary.

Multinational corps are one way of enhancing such flexibility. General Frederick Franks, as a former commander of the U.S. VII Corps in Germany, has substantial experience with multinational operations, especially with the German 12th Panzer Division. General Franks believes multinational corps, if trained in peacetime, are better able to move divisions of any nationality between corps as the nature of the enemy threat is identified. Such corps can also more quickly align their formations with those of other units.²

Yet another reason for considering multinational corps is the effect of changes in Germany's sense of national identity. The Germans, now officially united, feel less threatened by external attack than any time in this century. Germans dislike the appearance of being occupied, and feel less inclined to have large foreign forces on their soil. Multinational corps may make the presence of foreign forces more palatable by integrating these forces with allies among whom they live, making them less visible as distinct national entities.³

The London Declaration on a Transformed North Atlantic Alliance, made at the meeting of the North Atlantic Council in

July 1990, took note of many of the above changes. It indicated forming multinational units:

NATO will field smaller and restructured active forces. These forces will be highly mobile and versatile so Allied leaders will have maximum flexibility in deciding how to respond to a crisis. It will rely increasingly on multinational corps made up of national units.⁴

Having examined some of the reasons why NATO multinational corps may develop, we will now look at some of the conditions in which they might be used. The potential spectrum of conflict these corps may face still includes the possibility of mid to high intensity warfare. While less probable in the near future than any time since World War II, the potential for such conflict in Europe and the means to wage it will still exist.

The conditions for serious ethnic conflict and irredentist claims took a back seat to the cold war, but have not gone away. For example, as a result of Soviet direction after World War II, substantial German territory was absorbed into Poland, and substantial Polish territory was absorbed into the Soviet Union (principally the Soviet republics of Belorussia and the Ukraine). National boundaries do not reflect cultural and linguistic divisions, and this, as well as significant regional economic problems, could someday lead to interstate warfare.

Even if the CFE agreements are implemented, there will still be a substantial amount of warmaking materiel in the area between the Atlantic and the Urals. By these agreements, the Soviet Union alone is entitled to retain over 13,000 main battle tanks and 20,000 armored combat vehicles.⁵

The Soviet Union and its component republics have historic concerns about invasion and stability on their borders. While currently occupied with internal matters, the concerns over stability and invasion, coupled with the above war-making materiel, could some day see the Soviet Union or an independent Belorussia or Ukraine involved in serious conflict with Poland, Germany or other nations in the region.

Now that we have examined the conditions under which the multinational corps may be employed, some difficult aspects of its international nature should be explored. These include dissemination of intelligence, national and multinational responsibilities for logistical support, and corps command and control of multinational combat units. This study will focus on corps command and control (C²) of its combat forces. The planning and execution of tactical level battles through employment of its subordinate commands is the major role of the corps.⁶ The central concern of C² is how a commander gets his unit to do this.

As a first step, let us consider the things that can stand in the way of multinational C². Carl von Clausewitz, in his discussion of "friction in war", describes how "countless minor incidents . . . combine to lower the general level of performance, so that one always falls far short of the intended goal [of the commander]."⁷ In the C² of a national corps this friction can take the form of normal human mistakes such as misreading reports, misunderstanding orders, and errors in the meaning of technical terms. With the multinational corps' internal differences in

language, doctrine and force structure, the potential for such human mistakes is much greater, as is the resulting friction.

The greater potential friction within a multinational corps requires different applications of C² resources for mission accomplishment. Determining the nature of those different applications is useful for several reasons. First, information on these differences will help in planning for the structures of future NATO multinational corps as they transition from existing national corps. Second, knowledge of these diversities in applying C² resources may lead to development of common doctrine that will narrow these differences. Third, the better the assessment of these differences, the better NATO force employment planners can gauge the C² capabilities of future multinational corps. The last is especially important in planning for potential multinational corps employment in unprecedented extra-European contingencies.

This study has specific relevance for U.S. forces for two reasons. First, U.S. Army Europe is examining a U.S.-led corps structure containing a German division and a U.S. division for implementation as one of the NATO multinational corps.⁸ Second, wars involving the U.S. in the 20th century have usually involved combined operations at some level. Examples include the U.S. VI Corps and the British 1st Infantry Division at Anzio in World War II, the U.S. I Corps and the Republic of Korea 1st Infantry Division in the Korean War and the U.S. VII Corps and the British 1st Armored Division in Operation Desert Storm. This is unlikely

to change in the future, making the study of U.S. tactical C2 of multinational combat forces an important effort.

METHODOLOGY

The Department of Defense definition of command and control is:

The exercise of authority and direction by a properly designated commander over assigned forces in the accomplishment of the mission. Command and control functions are performed through an arrangement of personnel, equipment, communications, facilities, and procedures employed by a commander in planning, directing, coordinating, and controlling forces and operations in the accomplishment of the mission.⁹

This definition leads us to the C2 resources to be examined:

1. Communications.
2. C2 Facilities.
3. C2 Procedures.
4. Personnel.

Each resource will be evaluated for differences when applied to national and multinational organizations. This is done by comparing a U.S. corps' execution of the C2 functions of planning, directing, controlling and coordinating the employment of a U.S. division with employment of a German division. By analyzing these differences this study identifies implications for C2 resources that must be provided for the multinational corps to operate effectively. Historical analysis of combined exercises and wartime operations is used as evidence and to provide illustration.

II. COMPARISON AND IMPLICATIONS

COMMUNICATIONS

For the corps to command and control a division, it relies heavily on electronic communications systems. Such systems are often peculiar to the national armed force that fields them and the resulting technical differences cause difficulties when the armed forces of separate nations attempt to work together. We now compare U.S. tactical communications systems with the German systems to determine the extent of their interoperability and resultant resource implications.

Comparison

There are three electronic communications systems in a U.S. corps that carry the bulk of the information transfer load. They are Mobile Subscriber Equipment (MSE), the Combat Net Radio (CNR) and the Maneuver Control System (MCS).

MSE, the backbone of the corps communications system, provides voice and data communications from the corps rear boundary forward to the division maneuver battalions' main command post (CP).¹ This includes the following secure services: telephone, facsimile, mobile radiotelephone, and data transmission (such as the information moved by MCS). It also includes CNR network access. These services allow quick voice access by commanders and staff to other commanders and staffs in the corps area. MSE also has the capability for providing secure

transmission of some operational graphics, tabular lists, and written material such as orders and reports.

The CNR system is independent of MSE and provides secure voice and data transmission for units within the corps.² While primarily used at brigade level and below, it can be used as a limited corps-level command net. This was done by VII Corps during Operation Desert Storm.³ The main element of CNR that this study will address is the Single-Channel Ground and Airborne Radio System (SINGARS).

MCS is an automated system that links commanders and staffs from maneuver battalion to corps, using data links through MSE and SINGARS. It can gather, synthesize, display and distribute information for battlefield operations in a secure manner. This can include the graphic portrayal to all echelons of a common picture of the battlefield via: situation maps with operations overlays (both current and planned); friendly resources and unit status; and the known enemy situation. Through its message sending capability MCS may also provide timely dissemination of commanders' guidance and orders.

We now examine how these communications systems enable the corps commander to plan, direct, control and coordinate the employment of a U.S. division. The corps planning process requires timely information on the friendly and enemy situation. This knowledge forms the basis for commander and staff estimates and for the development and analysis of friendly and enemy courses of action. MCS helps visually present this knowledge by quickly

gathering and synthesizing information from subordinate units on unit status and enemy activity. MSE, with its secure facsimile capability, can also assist in getting this type of information to the corps commander and staff.

The timely preparation and dissemination of orders and their accompanying graphics are a central part of the corps' ability to direct the actions of the division. In ideal circumstances there is time for the division commander to attend a corps meeting to receive the operations order. MCS can be used both to write and disseminate these orders and their graphics to the division staff so preparations may be done concurrently. If time is not available for a presentation, then MCS message and MSE facsimile may be the only means of dissemination. This will also be the case when fragmentary orders or changes to the original order are required.

Control is the activity through which the will and intent of the commander are accomplished. It is effected through the establishment of control measures, supervision of execution and actions taken to correct aberrations. MCS and MSE can be a means of distributing control measures such as graphics, required reports and written instructions, as well as subsequent changes to them. Both systems also assist in the collection of subordinate unit reports that allow the corps to supervise execution.

Throughout the planning and execution processes, the corps staff synchronizes the effort via coordination. MSE and MCS allow rapid information exchange, adjustment of time schedules, and

coordination of simultaneous operations. SINGARS is especially useful in helping adjacent and supporting units coordinate their movements and activities.

Having examined the U.S. communications systems and how they contribute to the corps C² functions, we now look at like systems in a German division and the extent of their interoperability with the U.S. systems. These applicable German systems are: the Automatic Corps Communications System (AUTOKO), HEROS (which translates to "Army Command and Control and Information System for the Computer-based Conduct of Operations within Headquarters and Staffs"), and the SEM series of Frequency Modulated Very High Frequency (FM-VHF) radios.

AUTOKO is similar in concept to the U.S. MSE system, except that AUTOKO will not field a mobile radiotelephone capability until the late 1990s. AUTOKO does have a telephone and facsimile capability, but will not be secure by U.S. standards until it discontinues the use of Deutsche Bundes Post (DBP) commercial telephone lines in its system, sometime in the early 1990s.⁴

AUTOKO has only limited interoperability with MSE. The U.S. Department of Defense definition of interoperability for communications-electronics systems is: "The condition achieved among communications-electronics equipment when information or services can be exchanged directly and satisfactorily between them and/or their users."⁵ Using a NATO Analog Interface (NAI) device and a dedicated MSE Node Center Switch (NCS), six voice-only channels can be connected between MSE and AUTOKO. Data, to

include facsimile and MCS, cannot be passed.⁶ This is not expected to improve until the late 1990s with the fielding of AUTOKO 90 and a still to be developed digital interface device.⁷

The SEM 80/90 radios are not currently interoperable with SINCGARS unless both are locked into a prearranged single, nonchanging frequency. Liaison parties with their own radios are normally required for FM communications to occur. A limited number of voice-only Interface Adapter Devices (IAD) are being fielded that will allow voice interoperability, but will not pass data (including MCS information).⁸ The expected fielding of the SEM 93 system and a voice-plus-data IAD in the late 1990s may allow data to be passed.⁹

The HEROS system has capabilities similar to MCS in terms of message sending, data synthesis and graphics. A special software gateway allows technical interoperability with MCS, but agreement on procedures for message formats is lacking. The greatest difficulty is lack of agreement on where the U.S. terminal and interface gateway will go.¹⁰ The U.S. wants it to be at the German division main CP so that the U.S. liaison party will have access to it and can help man it. The Germans want the interface to occur at a node away from their main CP, so as to maintain the small size and electronic signature of the CP. A fielded system for MCS-HEROS interoperability is expected in the mid 1990s.¹¹

Given the limited interoperability of the above U.S. and German communications systems, there could be considerable constraints on how a U.S. corps could exercise the C² functions

with a German division. The most significant problem is the limited ability to transfer written text and graphics. This will restrict status reports flowing from the German division to the corps staff, hampering and slowing the corps planning and control efforts. Orders and graphics must be hand carried, lessening the time available for the German division staff to plan. Changes and fragmentary orders, if too complex to be sent by voice, will likewise be delayed. These delays will reduce the time available for staff and commanders to conduct coordination.

Coordination is also degraded by the interoperability problems of the FM radios. The small number of Interface Adapter Devices and problems in coordinating Signal Operating Instructions (SOI) information between the two nations removes much of the flexibility of FM.¹² This impacts primarily on the corps and divisional units attempting to coordinate movements and maneuvers, especially if these activities are not anticipated.

Finally, the current lack of interoperability between HEROS and MCS further hampers corps planning and control efforts. Rapid unit status information collection and dissemination to the staff and commander are missing. Such information must be gathered, synthesized and transmitted manually, which slows the planning, decision and control process.

Implications

The comparison of U.S. and German communications capabilities shows a number of communications resource implications. Until

fielding of more interoperable communications systems in the late 1990s, greater resources will be needed for C² in the multinational corps. At a minimum, these resources fall into the categories of communications systems, training and time.

That more communications systems (and people to operate them) might be required for multinational operations is not surprising. In the World War II Operation SHINGLE at Anzio, the U.S. VI Corps had to send a special signal element of SCR-399 radios and operators to its subordinate British 1st Infantry Division. Unlike the signal equipment of the U.S. divisions, the British signal equipment was not interoperable with that of VI Corps.¹³ Again, during the Korean War, quantities of U.S. communications equipment and personnel were required far beyond normal authorizations to maintain communications between U.S. headquarters elements and the various national units participating under the United Nations' flag.¹⁴

A detailed and comprehensive study, far beyond the scope of this paper, must be made of the communications requirements for this multinational corps and the extra systems required to fulfill them. In the past, this had been done poorly for multinational efforts, or the findings have been lost in budget or political arguments. This lack resulted in C² force structures that were patched together for exercises, but which may not bear the strain of wartime conditions.¹⁵

Pending such a comprehensive study on a U.S.-German multinational corps, some likely C² resource requirements may

still be identified. One is for direct transfer of message text and graphics from the corps to the active German division main CP. This will require additional corps MSE nodes and relays that go beyond the normal division rear area and directly to or near the active German CP. Another likely requirement is that U.S. divisions will need additional MSE nodes and relays, as well as FM radios and IADs, to coordinate with adjacent German divisions. Finally, the six channels (allowing six simultaneous calls) provided by a given MSE NCS and NAI for corps to division traffic needs to be evaluated to determine the number of systems needed.

Such a communications architecture has a jury-rigged nature. It will require greater effort and more specific expertise to employ and maintain this architecture than that of a doctrinal U.S. corps. With an increasingly smaller percentage of U.S. Army soldiers being assigned to Germany, greater emphasis and more time will be required for realistic multinational communications training. Care must be taken to avoid relying on assets such as DBP commercial telephone lines that would be vulnerable in war and unavailable for missions outside Germany.

Given the problems in communications interoperability, more time is required to conduct multinational corps operations. Orders take longer to disseminate. Reports come more slowly, lengthening the time required for commanders and staffs to build their picture of the battlefield. Coordination timeliness is decreased due to greater probability of interruptions in multinational communications systems. Naturally, the amount of

extra time required depends on the quality of inter-nation communications.

The comparison of U.S. and German communications capabilities showed a number of interoperability limitations, which in turn led to implications for communications resources. These included additional communications systems, increased emphasis on training and more time to conduct operations. We now look at C² facilities.

COMMAND AND CONTROL FACILITIES

This study examines the C² facilities from which the commander and staff exercise the C² functions: the command posts. These facilities are systems which divide C² duties by time and/or function. This division of duties may be the same between echelons of command, but may not be the same between nations. National variations in this division of duties can cause differing expectations and confusion about roles and functions at each command post (CP). In the potentially constrained multinational communications environment where information is not easily sent to multiple destinations, considerable time could be wasted if reports, information or even orders are sent to the wrong CP. We now explore the differences and similarities in U.S. and German command posts for their impact on multinational operations.¹⁶

Comparison

The principal U.S. C² facilities in both the corps and division are the tactical (TAC) CP and the separately located

main CP (the rear CP and its role in rear operations will not be considered for either army in this study). At both units they are organized in a similar fashion, and their various responsibilities for C² functions are divided similarly.

The TAC CP controls the corps' close operations, which normally cover the entire area of operations for the divisions under the corps. From the division perspective, most directives that are for the purpose of controlling the execution of an existing plan will come from the corps TAC CP. The corps TAC CP also coordinates the synchronization of assets used in close operations.

The main CP conducts the planning for corps operations and it produces the operation plans, operation orders and accompanying graphics that direct corps and subordinate division operations. These plans and orders are normally passed to the division commander if present at the corps main CP, or to the division main CP. The corps main CP coordinates all corps operations and assets not yet involved in close operations, and controls the corps deep operations.

The C² facilities in a German division are organized differently. There is no TAC CP. Instead, there are two main CPs that alternate command. These two main CPs (referred to as 1 and 2) are equally manned and equipped. They normally run 12 hour shifts, with the active CP exercising C² for the division. The inactive CP rests, moves to a new location (staying some five to ten kilometers from the other main CP), and always monitors the

situation in case a sudden shift of control from the active CP is necessary. As part of the regular shift change, updated information is transferred from the deactivating CP to the activating CP.

The active CP performs the C² functions normally handled by both the U.S division main and TAC CPs. The German CP is about half the size and has half the number of officers likely to be found during a shift in the U.S division main and TAC CPs. The Germans keep the size small to limit the CP's visual signature.

The German system for bounding CPs may cause some degradation in the corps' ability to plan, direct, control and coordinate. The corps must keep track of which German main CP is active, and must overcome the challenges to maintaining communications between that CP and the rest of the corps.

Every shift change responsibility for the German division C² is passed from one to the other physically separated main CPs. As a result every 12 hours the physical location where the German division's command and control resides, in effect, makes almost instantaneous five to ten kilometer jumps.

U.S. personnel and communications systems that must physically locate with the active German CP on a continuous basis have a dilemma. They can either move from CP to CP every 12 hours and accept the attendant disruption, or allocate enough redundancy in personnel and equipment to adopt a separate shift system similar to the German main CP.

The U.S. 3rd Infantry Division (3ID) encountered this problem during REFORGER 88. Then in reserve, 3ID was directed to place its aviation brigade under operational control of the German 12th Panzer Division (German divisions have little aviation, and no attack aviation). The aviation brigade commander, determining that liaison assets were insufficient to cover the needed details and language problems in the time available, chose to colocate his own CP with the active main CP of 12th Panzer Division. The aviation brigade CP had to scramble to move every time C² transferred from alternating German CPs.¹⁷

Implications

The concept of bounding CPs has a number of resource implications for control and coordination. U.S. CPs, such as the corps TAC and CPs from supporting corps aviation and artillery units, will potentially want to colocate with the active German CP. These U.S. CPs may need additional people and equipment for echeloned jumps. Liaison teams from the corps main CP, supporting units and adjacent divisions, may need the extra manning and equipment, especially radios, required to run shifts in two locations. Finally, anyone needing to maintain continuous communications with the active German division CP will have to dedicate communications assets to both German main CPs. As mentioned, this will likely include two sets of MSE nodes, relays, operators and facsimile systems.

The need for training on the other nation's C² facilities is the second resource implication. As with communications systems,

the continuous rotation of officers and soldiers who may be unfamiliar with differences in national C² facilities will require continuous work and training to keep those systems integrated in a multinational corps.

The comparison of U.S. and German C² facilities showed these systems operate differently. These differences lead to increased needs for manning, equipment, flexibility and training. This study now turns to an examination of the resources for C² procedures that might be employed from these facilities.

COMMAND AND CONTROL PROCEDURES

For the purposes of this study, resources for C² procedures in a multinational corps go far beyond procedural details such as report formats and chart standardization. While the latter are useful, the broader doctrine and techniques for exercising C² are more important. They are normally developed on a national basis and can be expected to differ with those of other nations. While there are a number of standardization agreements within NATO, in practice many procedures will remain different. This is due to diversity in each nation's military scope and perspective, as well as the relative isolation of each military's development of doctrine and techniques. Differences in doctrine and technique are now examined for their effect on C².

Comparison

The U.S. Army enjoys relatively common doctrine and overall technique for the C² of combat operations at the corps and

division levels. They are promulgated in manuals, taught at the Army Command and General Staff College, and tested by the Army's Battle Command Training Program. Two examples are the offensive and defensive frameworks (commonly known as the Battlefield Framework) from Field Manual 100-5 Operations, and reiterated in the corps and division operations field manuals.¹⁸ Outlining the concepts for deep, close, rear, reserve, and security operations, these frameworks are common doctrinal structures that aid the corps and division staffs in planning combat operations.

As another example, operational terms and symbols, when properly employed, aid in the efficient use and common understanding of oral, written and graphic medium. This speeds the planning process, streamlines directives and simplifies control measures and coordination efforts.

The last example concerns Army airspace command and control (A²C²) at both corps and division level. Outlined in the same manuals as the offensive and defensive frameworks, it states that the Army will control airspace below a certain altitude for its helicopters and any other aircraft (such as close air support) that enter that airspace.¹⁹ This is important if the activities of Army aviation, artillery and air defense forces, as well as other services' aircraft, are to be planned, coordinated and controlled for safe, effective operations through corps and division areas of operations.

These same doctrine and techniques are not mirrored in the German division. For example, German Army Regulation 100/100

Command and Control of Armed Forces, does not have the concise offensive and defensive frameworks of its roughly equivalent U.S. Army counterpart: FM 100-5. 100/100 does contain most of the components of these frameworks, except for the concept of deep operations.²⁰

The German corps and division are not resourced to conduct deep operations, for neither organization has the targeting capability.²¹ The German division has no attack helicopters, and even the German corps' antitank helicopter units are designed for defensive fire support from friendly territory.²²

Moving now to a discussion of terms and symbols, standardization in practice has been incomplete. While NATO Standardization Agreements (STANAGs) are the international documents common to both armies, they require agreement from all NATO members and thus may take years to update. In the meantime, national development of new doctrine, technique and accompanying terms and symbols has moved on.

Two examples may serve to illustrate. The German Army uses a connected series of blackened triangles (similar to the U.S. symbol for an antitank ditch) along the Forward Edge of the Battle Area (FEBA) to indicate a sector for the main effort in a defense. There are also symbols depicting a continuously fighting delay and a delay with specified positions. None of these are used by the U.S., nor are they NATO standard.²³

The 3ID experienced this problem during REFORGER 88. Working with 12th Panzer Division, the 3ID commander found German overlays

different enough from U.S norms to require German officers to interpret them.²⁴

The 3rd Squadron, 11th Armored Cavalry Regiment had a similar experience during operations with a German Army brigade on REFORGER 88. Terms that seemed clear, such as "screen," "defense," and "delay," often did not translate well unless very proficient German-English speakers were present. Even then there were misunderstandings. The U.S. commander found extensive rehearsals necessary to find and solve these problems.²⁵

The potential for such misunderstandings in a multinational corps is significant. Lacking common understanding of some doctrine, symbols and terms, a U.S. corps directive could unintentionally misdirect. Control measures may not have the desired effect. Coordination throughout the corps between U.S. and German units could be frustrating, as well as dangerously inadequate.

Airspace coordination between the U.S. corps and German division is also likely to be a problem. Addressing the subject of army aviation interoperability, recent German/U.S. staff talks stated:

Employment of aircraft across GE/US sectors of responsibility reduces aircraft survivability and increases the possibility of fratricide caused by the lack of shared intelligence information and C² systems interoperability.²⁶

Most German air defense weapons are organic to or controlled by their Air Force. Air space coordination is procedurally seen as less of an army affair for the Germans than is normally the

case in a U.S. division, which has a large A²C² cell and a aviation brigade.²⁷

This lack of "C² systems interoperability" cited above is brought about, in part, by differences in doctrine and procedure. The U.S. corps, if it is to employ CAS or its own aviation in the German division's area of responsibility, must redefine how it normally does its A²C².

Implications

The examples above indicate resources for C² procedures needed for successful U.S.-German multinational corps operations. Many of these resources are related to personnel. They include schooling, language skills, liaison, and staff assignments, and are considered in the next section. Other required resources include development of combined doctrine, technique and procedure, the continuing dynamic of C² procedural interoperability, and the consideration of time as a resource.

One important way of enhancing common understanding is the development of common doctrine, technique and procedure. These tend to be unilaterally developed with a national focus, then patched together with those from other nations as necessary. Greater initial effort by each nation's army toward combined development would lessen the number of gaps in commonality that must be dealt with later, often by units at lower levels.

There will be such gaps in common doctrine and technique, and if not resolved elsewhere, they must be bridged at the corps level. This multinational corps must be given great latitude to

develop and employ its own unique C² procedures. This must include the willingness of the German division to adopt, where feasible, those C² procedures (including language) that the preponderate nationality of the corps (in this case U.S.) makes necessary.

The U.S. corps may need to change how it would normally operate. One example is deep operations. Due to the limitations of the German division, the corps might have to direct some of its own deep operations assets in the Germans' area of operations. This must be carefully done, especially if the technique chosen is to give the German division operational control of a U.S. corps attack aviation battalion. The German division does not have the existing aviation C² structure that a U.S. division has.

Multinational C² procedural interoperability, never a solved problem, is a continuing dynamic in a multinational corps. This dynamic is constantly affected by personnel rotation and by changes in doctrine. These pressures are evident in peacetime, but would also operate in all but the shortest of conflicts.

The multinational corps must seek to regulate this C² procedural interoperability dynamic. The corps should change procedure where prudent, and otherwise enforce standardization in its C² procedures. Command post exercises involving commanders and staffs from corps to brigade take on greater importance in a multinational organization so these should be done with greater frequency.

Finally, greater amounts of time are required to work through the differences in doctrine and procedure. The potential for misunderstandings of doctrine, technique and language in a multinational corps are much greater than in a national corps, and so demand more time for locating and fixing problems. To this end, the importance of backbriefs and rehearsals conducted between the corps, divisions and supporting units will be considerable.

The comparison of U.S. and German C² procedures reveals room for improvement in standardization and common development of doctrine and technique. Considerable time and effort within the multinational corps must be continuously expended to achieve and retain a useful level of C² procedural interoperability. We turn now to the last C² resource to be considered, personnel.

PERSONNEL

People are the actors that make C² work. They use the communications systems, the facilities and the procedures that lead the unit to mission accomplishment. This is especially true for multinational organizations, since C² interoperability is very much a human endeavor. Accordingly, differences in what people, in the form of staffs, know and how they are organized will be of great concern. These differences and their effects on C² will be examined by comparing the operation and organization of the U.S. and German staffs.

Comparison

Commanders establish the command climate in which the corps and division staffs develop relationships with each other.

The personalities and experience of these commanders affect those relationships, and help determine whether they are adversarial or cooperative.

Staffs are the prime agents in the C² relationship between corps and its divisions, and one staff will generally know the capabilities of the other. The staffs at both echelons are similarly organized in structure and function. The personnel of the staff also share a level of common language, doctrine and experience acquired in the U.S. Army school system and previous assignments in corps and divisions.

Liaison elements are important components of the staff because they enable the C² process between echelons and adjacent units. Liaison elements are employed by convention from higher to lower headquarters elements and from left to right between adjacent units. Their roles include acting to:

- Assist their own commander (sender) and the commander to which they will be going (receiver) in facilitating planning and mission execution.
- Expedite the two-way flow of information.
- Provide a human presence from the sending commander to the receiving commander.
- Function as subject matter experts on both commands, including capabilities, doctrine, procedures, status and missions.
- Provide directed telescopes for the sending commander.²⁸

C² functions between a U.S. corps and division are greatly enhanced by their staffs' similarities in structure and

experience. This is not necessarily the case in a multinational organization. A German division staff is much smaller than that of a U.S. division. For example, the German G3 section which is the focus for operations C2 in both armies, is about half the size of that in a U.S. division (See Table 1). About 22 officers and 24 sergeants work in the German division G3 (combining both main CPs).²⁹ Some 40 officers and 37 sergeants work in the U.S. division G3 (combining both TAC and main CPs).³⁰

This difference is actually more pronounced because the G3 operations and plans functions are structured differently in terms of organization and personnel. The U.S. division G3 has a Current Operations Cell at the main CP, and a G3 Operations Element at the TAC CP. There is also a Plans Cell at the main CP.³¹

TABLE 1.-- DIVISION G3 STAFF COMPARISON (OFFICERS/NCOS)

	U.S. DIVISION G3 STAFF			GERMAN DIVISION G3 STAFF		
	TAC	MAIN	TOTAL	MAIN1	MAIN2	TOTAL
OPS	3/6	9/7	12/13			
PLANS		7/4	7/4			
OPS/PLANS TOTAL:			19/17	3/2	3/2	6/4
OTHER*	4/5	17/15	21/20	8/10	8/10	16/20
			40/37			22/24

* Includes cells consisting of Fire Support Element, Army Airspace Command and Control, Air Liaison, Engineer, and Nuclear, Biological and Chemical.

In the German division G3 section, there is no separate plans cell. Both functions are performed by the six officers and four sergeants working in G3 Operations and Plans, which is less than one third the size of combined operations and plans personnel in the U.S. division G3.³²

Another aspect of the differential in staff size is the German division staff's reduced ability to work through differences in language, doctrine, technique and communications systems. When working in a U.S. corps, the German division has considerably more to do in this regard than a U.S. division, and has far fewer people to do it.

The above differences could have a significant effect on the U.S. corps' ability to conduct C² functions with the German division. The U.S. corps staff, with normal structure and procedure set for exercising C² with large U.S. division staffs, could overwhelm the smaller German division staff with reporting requirements, and complexity in operation orders and coordinating requirements. An examination of the C² functions in this context will better illustrate this.

For planning and controlling, the corps staff requires as much timely information as possible about the corps' situation. There will be recurring requirements for reports from subordinate units on readiness, locations, activities, results and other information. The German staff may well have difficulty keeping up with and transmitting these requirements, especially without the help of MCS.

Regarding the function of directing, U.S. corps operations orders and annexes can be long and complex. They are generally much larger than a German division would get from a German corps.³³ This difference, coupled with language and doctrine differences, could make it very difficult for the German division staff to analyze the order in a timely and accurate fashion.

This same complexity will tend to create many coordination requirements. This will include not only those from various entities from the large corps staff, but requirements for coordination from supporting corps units such as attack aviation, artillery, engineers, and air defense. There will also be coordination required with adjacent units, as well as any involved in operations such as relief and passage of lines. U.S. divisions find this coordination difficult to accomplish. With language, doctrine and communications problems, these coordination requirements will likely be more than the smaller German division staff can execute.

Implications

Several personnel resources are required to overcome the above difficulties in exercising C², and in fostering working relationships between personnel in a multinational organization. These resources will be examined in terms of personnel force structure, training, assignments, qualities of the commanders and time to establish relationships.

One of the most important personnel force structure issues is adequate liaison elements. As discussed earlier, their role in

facilitating C2 is important, and this is especially so in a multinational organization. When properly trained, they can provide a personal bridge between the commanders and staffs of different nations, and can be invaluable in explaining language, doctrine, procedure and the sending commander's intent.³⁴

To do this, liaison elements must be adequately resourced, especially in terms of people, vehicles and communications systems. Historically this has often not been done, especially in peacetime. A recent 3ID commander in Germany said that his liaison element authorizations, both personnel and equipment, were insufficient for the continuous operations he would be expected to perform with German units.³⁵ Lieutenant Colonel John Hixson's studies of combined operations led him to the conclusion that such under-resourcing of liaison elements occurs frequently.³⁶

Hixson also pointed out the mistake of waiting until war to resource liaison elements. At this point, there is no time to establish the expertise and personal relationships needed to make liaison elements work in a multinational environment.³⁷

This multinational environment in NATO requires even more liaison elements than might normally be found in national units practicing the normal higher to lower, left to right employment. The NATO STANAG on establishing liaison specifies that liaison must be reciprocal when:

- a. A force is placed under the command or control of a headquarters of a different nationality.
- b. Brigade size and higher formations of different nationalities are adjacent.³⁸

Liaison is not the panacea. Studies have suggested that when the integrated allied portion of an organization reaches one quarter to one third the size of the former mono-national unit, the allied presence is felt in functional areas such that liaison alone will not suffice. The organizational staff must be augmented with allied members.³⁹

This ratio is likely to be reached when adding a German division, as well as some German support units, to a U.S. Corps. Augmentation of German staff personnel to a U.S.-led corps staff is suggested. This will greatly help that staff in exercising the C² functions with German units.

This cell augmentation, rather than a completely combined staff, is an important distinction and should be done via detachable cells. The U.S. corps staff forward deployed in Germany must have a stand-alone capability. If the U.S. corps needed to be employed in a U.S. only contingency, the German augmentation cells could be pulled out.

Regarding personnel training, the issues of language and knowledge of each other's armies are important. While the official language of the corps will probably be English, and many German officers speak it, this will not always be sufficient. There may well be occasions when a German staff counterpart (which could include NCOs) cannot speak English adequately to understand or explain the issue at hand. It is therefore not prudent to put the responsibility of lingual interoperability on one nation.⁴⁰ German language instruction needs to be better resourced. This

may take the form of more capacity at the Defense Language Institute or greater use of contracted instruction at the local level.

Greater knowledge of each other's armies and how they operate will improve the exercise of the C² functions. This may be gained by use of the following: instruction provided in each army's service schools, possibly as an elective, on the other army's operations and structure; staff personnel exchanges; and increased exchanges of students at service schools.

With investments made in training, how these personnel are assigned is important. Those with such training, or previous experience with the other nation's army, need to be utilized where possible in the multinational organization. This must be balanced with career development of soldiers in both armies, but for the U.S. this may take the form of some management system modeled after the Foreign Area Officer program (and possibly related to it), the Joint Specialty Officer program or an additional skill identifier.

More important than single staff members are the commanders. As discussed earlier, they set the climate for relations between units and echelons. In a multinational organization, the commander's personality and experience set the stage for interoperability between national commands. His willingness to get to know, and establish two-way cooperation with, the other nation's units is crucial to motivate the personal efforts needed to make interoperability work.⁴¹

The U.S. must learn from its commanders' past mistakes. Some of the failures of Operation SHINGLE at Anzio have been traced to U.S. VI Corps commander Major General John Lucas' lack of effort in establishing solid relations with the subordinate British 1st Infantry Division. Lucas rarely visited the British and made little effort to get to know them. Perhaps following his example, Lucas' staff rarely visited the British either. This situation contributed to bickering and bitterness between the corps and British division when things began to go wrong.⁴²

More time is needed to establish personal relationships and trust between allied commanders and staffs. This takes longer in a multinational environment given the barriers of different language, culture and national interests. Relationships and trust are crucial to cohesion, especially at corps and division level. These personal relationships are also key to successful interoperability activity, a conclusion reached by John Hixson in his study of the U.S. VII Corps and German 12th Panzer Division relationship.⁴³

The comparison of U.S. and German C² personnel showed several differences in manning and organization. These differences indicated the need for complete resourcing of liaison elements and German staff augmentation for the corps staff. Also indicated was greater emphasis for training in language and each other's operations.

III. CONCLUSIONS AND RECOMMENDATIONS

There are serious challenges ahead for both the U.S. and German armies in providing the needed command and control resources for the tactical employment of combat forces in a future NATO U.S.-German multinational corps. These resources go beyond what either nation would require and field for purely national corps. They can be categorized under four headings: communications, facilities, procedures, and personnel.

The communications systems currently in use have limited interoperability, a condition that will exist for years to come. More systems and people to man them will be required. A comprehensive examination of the proposed corps structure and employment capabilities is needed to determine the real communications requirements.

Facilities to execute each nation's C² functions operate differently. These differences cause increased needs for manning, equipment and flexibility to keep the control and coordination processes working between the various moving command posts.

For C² procedures, some standards and doctrine have been agreed to at the national level. However, more commonly developed doctrine and technique would be useful. While there are a number of informal unit level interoperability handbooks, there are no field manuals that address in detail how to work with other nations at corps and below.

As for personnel, there are a number of differences in the level of manning and functional organization between the two national unit staffs. This constrains the C² process. Liaison elements can do much to overcome this, if historic reluctance to train and resource these elements is overcome. German staff augmentation to the corps staff would help, but should be in detachable cells in case of U.S.-only contingency operations. Training in language and each other's unit operations would also be necessary for those personnel that must regularly interact with the other nation's personnel.

The command and control of U.S.-German multinational corps operations is feasible. There is nothing about these operations beyond human or technical capability. It is a matter of time, money and effort going into the needed resources.

If, however, fewer C² resources are available, then U.S.-German multinational corps operations, while feasible, will be more uncertain and less timely in the accomplishment of those operations. There will be less ability to counter the effects of friction, Clausewitz's concept of how things can go wrong.

A lessening of C² resources may well come about. Budget realities will continue. If the Americans and Germans continue to perceive a declining Soviet threat, then there may be even fewer resources of any type for the military.

Priorities must be set based on both expected funding and assessments of which efforts will provide the most effective C² under conditions of interoperability. Of all the resource

Implications discussed, liaison elements deserve the closest look. For the comparatively small number of people and equipment involved, liaison elements can have a positive impact at relatively low cost on multinational command and control.

If all else fails, the multinational corps can man, train and equip these liaison elements. And this the corps must do in peacetime if it is to mitigate the inherent friction in wartime multinational operations.

The future holds promise for the multinational corps. Civilian and military agencies from both the U.S. and Germany, as well as other NATO nations, are seriously studying the multinational corps concept and are working to find common agreement on resourcing its implementation.¹ Given the inherent difficulties for command and control, this resourcing is vital if the multinational corps is to survive and operate effectively on tomorrow's battlefield.

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